

BAIE VERTE CANAL.



NOTES

RESPECTING

UNDERGROUND FOREST, ETC.

ALSO

Synopsis of Reports

ON

BAIE VERTE CANAL,

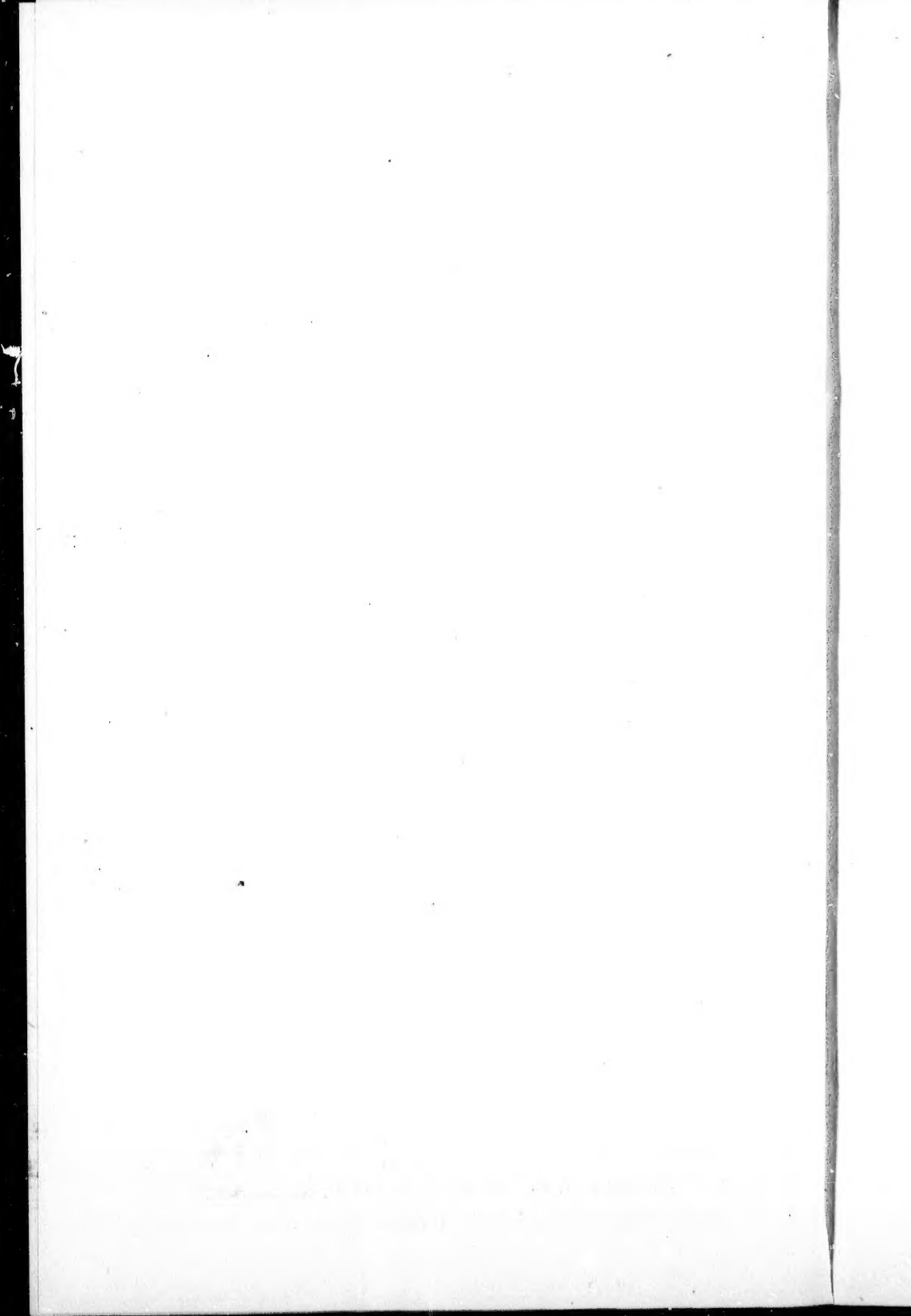
FROM 1822, TO 1874.



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1872.



NOTES

RESPECTING UNDERGROUND FOREST, &c.

Mossy Plains.

According to Borings made November, 1873, in the Mossy Plain, at the Head of Long Lake, the thickness of the moss varies from 9 to 13 feet, on Mr. Keefer's location line of 1872.

The crust of the plain for a depth of about 5 feet, is composed of roots and live moss; below this depth, the material appears to consist of rotten moss and decayed vegetable matter, resting upon the fallen timber of a buried forest, probably accumulated centuries ago,—the whole resting upon clay and red sandstone rock.

This plain, which appears to be an accumulation of forest timber and moss, is situated at the water-shed between Long Lake and the valley of the Tidnish.

Plains similar in outward appearance to the one described, are found near the water-shed, between the valleys of the Rivers Missiguash and Tidnish; they vary from $\frac{1}{4}$ to $\frac{1}{2}$ mile in length, by $\frac{1}{8}$ to $\frac{1}{2}$ mile in width.

The preceding is based on a report from Alex. Monro, Esq., P.L.S., of Port Elgin, N.B., under whose supervision the borings were made.

Marshes and Bogs.

In Mr. Baillairgé's original report, dated 8th April, 1872— at page 152 of Appendix to Public Works Report for 1872—under the heading of "Marshes, Bogs, Dykes," &c., will be found a description of the black muck, of a hard peaty nature, which is found below the first layer

of clay and sand, at depths of from 13 to 24 feet below the top surface of the Bogs, in the Missiguash Valley.

This peaty understratum, which rests chiefly on white sand, has been also found beneath the soil of the dyked marshes, at depths varying from 15 to 25 feet below their top surface; it appears to extend for a distance of about 9 miles from the Bay of Fundy, eastward, and to have a thickness of from 1 to 4 feet.

The same peaty substance and underlying soil crop out on the banks of Cumberland Basin, where pine and beech stumps, &c., are found imbedded in a similar description of soil, near the outlets of Sharp's Creek, the River La Planche and Cumberland Creek, when the tide is out. This would lead to the supposition, already made by Professor Dawson, in his *Acadian Geology*, respecting the subsidence of the soil, or the increased height of the tides.

Synopsis of Reports on Baie Verte Canal.

Robert C. Minnitte, P.L.S.—Acting under instructions from Government of New Brunswick. Survey, October, 1822, for a canal between Bay of Fundy and Baie Verte. Line traced through valley of Au-Lac, across to Missiguash Lakes, and thence to River Tidnish, for a canal of small depth, say 4 feet, to be fed by fresh water.

Francis Hall, C.E.—Acting under instructions from Sir Howard Douglas, Baronet, Lieut.-Governor of New Brunswick. Report dated October, 1825, on Minnitte's Survey. Also on line from Shediac to bend of Petitcodiac. Also on line from Shediac viâ Memramcook River to Dorchester. Also on line across the Isthmus from Au-Lac to Tidnish—which he recommends—the other lines being impracticable, for want of water supply.

He proposes that canal should commence $3\frac{1}{2}$ miles up the Au-Lac, and terminate at a point 2 miles up the Tidnish; and that it should be fed by a fresh water reservoir of 150 acres, to be formed in the valley of the Missiguash for the canal supply. Canal to have its summit six feet above the highest spring tides of the Bay of Fundy—to be 21 feet wide at bottom, 45 feet wide at top, with 6 locks $105\frac{1}{2}$ feet long $\times$ $20\frac{1}{2}$ feet wide, and 8 feet of water on the lock sills. The whole estimated to cost £67,728 14s. 10d. sterling = \$298,006.45.

This estimate would be reduced, he says, to £45,152 10s. 4d. sterling = \$198,671.09 for a depth of $4\frac{1}{2}$ feet, instead of 8 feet.

Thomas Telford, C.E.—Report addressed to Sir Howard Douglas, Baronet, Lieutenant-Governor of New Brunswick, towards 1826, on Hall's Reports and Plans, which were referred to him. He recommends canal to be built 30 feet wide at bottom and 72 feet at water surface in deep cuttings; but 45 feet wide at bottom, and 95 feet at top surface, elsewhere; with locks of 150×40 feet, and 13 feet water on the lock sills. The summit level of

upper reach to be at same elevation as highest spring tides of Cumberland Basin. Fresh water to be used mainly for supply; salt water to be used at spring tides, if required, in case of a deficiency. Estimated cost, £155,898 5s. 5d. sterling = \$685,952.39.

H. O. Crawley, Capt. R.E.—Reports on 19th January and 19th March, 1843, to Sir William M. G. Colebrooke, K.H., &c., Lieut.-Governor of New Brunswick, respecting his survey, which was done at joint expense of New Brunswick, Canada, and Prince Edward Island; also the schemes proposed by Hall and Telford.

He considers that a canal 45 feet wide at bottom, 85 feet wide at top surface, with locks of 150 feet $\times$ 40 feet, and 9 feet of water on the sills, is sufficient; but that it is impracticable, on account of the deficiency of the fresh water supply; and he objects to using the Bay of Fundy tidal water to supplement the deficiency.

(6,607). John Page, Chief Engineer Public Works.—Reports to Secretary of Public Works, Canada, on 7th May, 1869, upon the previous surveys. After reviewing the schemes proposed by Hall and Telford, he is of opinion that an abundant supply of fresh water can be obtained by adopting a lower level than the one they recommend, or at an elevation of from 10 to 12 feet below the level of the highest tides of Cumberland Basin; and that the waters of the Bay of Fundy should be kept back by a lock at the western end of the canal. He recommends further surveys and examinations.

(22,692). Report—G. F. Baillairgé, Assistant Chief Engineer (8th April, 1872), to J. Page, on projected canal: recommends Au-Lac and Tidnish line for a Whole-tide Canal; water supply to be taken from Bay of Fundy, by means of one or more rivers converted into reservoirs.

	Miles.
Length of Canal—shore to shore.....	18'84
Do. do. from 16 feet at extreme low water, Bay	
of Fundy, to 16 feet in Baie Verte.....	21'43

Number of Locks:—Four at Bay of Fundy, two at Baie Verte.

Locks of Upper Reach, calculated for 18 feet water on mitre sill, in case of future deepening.

Size of Locks:—270 × 40 feet. Navigable draft, 15 feet.

Western entrance on Bay of Fundy, to be at Au-Lac Point, near mouth of that river. Eastern entrance, Baie Verte, to be at Tidnish Head.

Canal Commissioners (page 90).—Report, 24th February, 1871. Estimate, \$3,250,000. Mr. Keefer supposes that canal may be fed from the tide-water of Baie Verte, which is from 13½ to 22½ feet lower than the Bay of Fundy at high tide; and from 18½ to 19½ feet higher at low tide than the Bay of Fundy. This would involve 19½ feet in depth of additional cutting throughout.

(22,527). J. Page (April 23, 1872). Cannot report without further time on Mr. Baillairgé's project.

(22,573). Messrs. Keefer & Gzowski (May 2, 1872). Report on Baillairgé's Report 22,692, recommended certain modifications and reductions.

(28,653). Messrs. Keefer & Gzowski (Feb. 18, 1873). Recommend a Half-tide Canal viâ La Planche, Long Lake, Tidnish and Weeks' Point. Cost estimated at \$5,317,000. This line not susceptible of extension hereafter for a Whole-tide Canal. Length of Canal between Entrance Locks, 20½ miles.

(29,889). G. F. Baillairgé (April 12, 1873). Furnishes estimate of cost of a Half-tide Canal on the Au-Lac and Tidnish line, susceptible of extension for a Whole-tide Canal.

One based on Mr. Keefer's project for 12 hours.....	\$5,650,000
Do. do. his own project for 16 hours.....	3,217,849
Also cost of a Whole-tide Canal.....	8,592,849

(38,591). G. F. Baillairgé (Nov. 17, 1873). Report to Chief Engineer on Location Survey. Recommends Au-Lac and Tidnish line viâ Missiguash Valley; also Rivers Au-Lac and Missiguash as Reservoirs and Settling Ponds.

			Cubic yards.
Canal Excavation, Half-tide, Bay of Fundy and	Full-tide, Baie Verte.		14,640,634
Do.	Three-quarter-tide	"	14,911,493
Do.	Full-tide	"	15,506,639

Length of Canal. {	Between Entrance Locks.....	18.67 miles.
	Shore to Shore	19.25 "

Western entrance—Bay of Fundy—to be at Au-Lac Point near mouth of that river.

Eastern entrance—Baie Verte—to be at Tidnish Head.

(38,591). J. Page (Dec. 10, 1873). Report on Mr. Keefer's project—also on Mr. Baillairgé's—condemns the former—approves the latter,—submits estimate of cost of a Canal on the Au-Lac and Tidnish line via Missiguash Valley.

For a Half-tide Canal	\$7,700,000
Three-quarter-tide Canal.....	8,100,000
Full-tide Canal.....	8,500,000

Synopsis of Reports.

MEMRAMCOOK AND SHEDIAC LINE.

A line was explored between Dorchester Island, on the Bay of Fundy and Shediac Bay, for a Canal through the Valley of the Memramcook, by Robert Minnitte, P. L. S., in 1823; it was also surveyed and reported on by Francis Hall, C. E., in 1825, and by Capt. Crawley, R. E., in 1843,—and finally by S. Keefer, C. E., in the autumn of 1872.

Plans and profiles of the 1st, 3rd and 4th Surveys are in the possession of the Government.

Length of line from shore to shore.....	22.92 miles.
Do. from end to end of entrance piers. . .	25.59 miles.

16 Locks required, and 28,200 lineal feet of pier work.

All the head-water available, according to above reports, is but a fractional portion of what is required for the supply.

A thorough cut for a Tide-Canal would involve a cutting 25 miles long and 115 feet deep at summit.

MONCTON AND SHEDIAC LINE.

This line less favorable for a Canal than the Memramcook line.

Length of artificial navigation, were it possible, is about 34.69 miles.

Number of Locks required—19.

The only source for the supply of a Canal between Moncton and Shediac is a small basin among the Hills, called Humphrey's Pond, about 500 acres in extent, with very limited drainage.

A thorough cut for a Tide-Canal would be 17 miles long, from Moncton to Shediac, and 150 feet deep at the summit. A dam would also be required across the mouth of the Petitcodiac, in order to kill the Bore and make slack-water navigation up to Moncton, a distance of 17 miles or more, through the most of which a channel would have to be dredged.

This line was also examined by the above named parties who explored the Memramcook line.

According to all the reports furnished by these gentlemen, "the idea of constructing a navigable Canal, either by the Memramcook or Moncton lines, is not to be entertained, and is not worthy of serious discussion."

(See pages 18 and 19, S. Keefer's Report, 19th Feb, 1873.